WOLF LAKE

Lake County

2005 Fish Management Report

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EXECUTIVE SUMMARY

- A general lake survey was completed on Wolf Lake on May 26, 2005. Water chemistry and aquatic vegetation data were also collected.
- The Secchi disk reading was 3.0 ft and dissolved oxygen concentrations were adequate for fish survival throughout the water column. Chara dominated the plant population, but slender naiad and sago pondweed were found frequently throughout the lake.
- We collected 495 fish representing 18 species and one hybrid (tiger muskie). White perch ranked first by number and fourth by weight and may be contributing to the reduction/elimination of a number of species since white perch were first identified in the fish community in 1999.
- Bluegill ranked second in abundance followed by largemouth bass. Bluegill growth was slow, reaching harvestable size at age 4. Bass growth was slow until reaching harvestable size at age 5.
- Walleye stocking by Perch America since 1998 has provided a viable fishery with walleye up to 23.4 in TL being present. Walleye ranked sixth in abundance. Continued walleye stocking and vegetation control are recommended.

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INTRODUCTION

Wolf Lake is a 907-acre lake located on the Indiana-Illinois state line in the extreme northwest corner of Indiana. The Indiana portion of the lake (439 acres) is separated from the Illinois portion (468 acres) by a levee lying just west of the state line. Several culverts connect the two halves of Wolf Lake, allowing some fish to pass between the two sides.

Much of the Indiana portion of Wolf Lake's shoreline is owned by the city of Hammond. Development of the shoreline includes a city beach and city-owned boat launching ramp with the following fee schedule; Hammond residents $4/day, $15/season and non-residents $10/day, $50/season. The lake offers a variety of recreational opportunities to a large number of people in this highly populated region (Dar Lin et al. 1996; Robertson 1987).

Wolf Lake once flowed north into Lake Michigan, but this channel now ends approximately one-quarter mile south of the Lake Michigan shoreline. Two large industrial plants are located on this channel. The water level in Wolf Lake has generally been higher than Lake Michigan. Water currently flows west from the lake over a control structure and into a ditch that empties into the Calumet River.

The Illinois portion of the lake is located within the state-owned William Power Conservation Area. Illinois routinely stocks its portion of the lake with channel catfish, northern pike, tiger muskellunge, and threadfin shad.

A diagnostic-feasibility study was conducted by Dar Lin et al. (1996) on the entire lake in the early to mid-1990's as a joint effort between federal, state, and city governments. The document detailed the quality of the environment both within and around the lake and recommended the development of a lake management plan. Dar Lin et al. (1996) lists and describes the abundance and distribution of aquatic plants throughout the Wolf Lake system.

Channel catfish, northern pike, and muskellunge have been stocked on several occasions on the Indiana side of the lake since 1977 (Table 1). Indiana began a walleye-stocking program at Wolf Lake in 1998 in association with Perch America, Inc. (PAI). The Indiana Division of Fish and Wildlife (DFW) stocked small fingerling walleye in June while larger fingerlings were stocked in the winter by Perch America. Walleye evaluations in the fall of 1998 indicated good survival of the DFW stocked fish. However, sampling conducted in the fall of 1999 and 2000

indicated poor survival of the DFW fish and no further state stocking occurred. PAI's annual stocking of advanced walleye fingerlings has continued.

The last general survey was conducted in 1999 (Table 2). We collected 1,013 fish representing 19 species and two hybrids. White perch, which had not been found in previous surveys, comprised 49% of the sample by number and 25% by weight. Alewife, dominant in the 1987 survey, were nearly absent in the 1999 survey. Yellow perch, bluegill, largemouth bass, walleye, and black crappie were the most abundant game fish collected.

The 2005 survey was conducted to assess the status of the current fishery prior to the start of a major wetland restoration project sponsored by the Army Corps of Engineers and the City of Hammond. This seven million-dollar project was to start in the fall of 2005.

On May 13, 2004, Hammond conducted a whole lake fluridone treatment to control Eurasian watermilfoil (EWM). The initial application was followed by a "bump" on June 24, 2004.

METHODS

This survey was conducted on May 23-26, 2006, as part of the DFW Work Plan 204755 that covers management of fish populations in Wolf Lake. Some physical and chemical characteristics of the water were measured in the deepest area of the lake (DFW guidelines 2001). Submerged aquatic vegetation was sampled on May 25, 2005 and August 26, 2005, using guidelines written by Pearson (2004). A global positioning system (GPS) device was used to record the location of the limnological data collection site, aquatic vegetation sample sites, and fish collection sites.

Fish were collected by pulsed D.C electrofishing the shoreline at night with two dippers for 1.5 hrs. Six trap net sets and 9 experimental-mesh gill net sets were also used to collect fish. All fish collected were measured to the nearest 0.1 in TL. Average weights for fish by half-inch groups for Fish Management District 1 were used to estimate the weight of major game fish within the sample. Fish scale samples were taken from selected species for age and growth analyses. Proportional stock density (PSD) and relative stock density were calculated for bluegill and largemouth bass (Anderson and Neumann 1996).

RESULTS

Wolf Lake was at normal pool. The Secchi disk reading was 3.0 ft. At the time of the survey, dissolved oxygen concentrations were adequate for fish survival throughout the water column. Submerged vegetation was found to a maximum depth of 8 ft. on May 25 and 6 ft. on August 26. Chara dominated both samples. Largeleaf pondweed and curly-leaf pondweed were also found in the May and August samples. Also present in the August sample were slender naiad, sago pondweed, Vasey's pondweed, Eurasian watermilfoil, water stargrass, eelgrass, and Illinois pondweed.

A total of 495 fish representing 18 species and one hybrid (tiger muskie) was collected during this survey. Total weight of the fish sample was approximately 281.61 lbs. Species collected in the last two surveys, but not in this survey included golden shiner, alewife, white bass, white sucker, quillback, bigmouth buffalo, bluntnose minnow, goldfish, grass pickerel, lake chubsucker, and longnose gar.

We collected 197 white perch that weighed 39.78 lbs. They ranged in length from 3.4 to 10.2 in TL and averaged 7.5 in TL. Age-1 through 6 fish were present in the sample. White perch ranked first in relative abundance by number and fourth in relative abundance by weight. White perch were collected at the rate of 30.4/hr of electrofishing and 17.3/gill-net lift. Slightly more than half (50.3%) of the white perch collected were quality size (8.0 in TL).

We collected 101 bluegills weighing 11.9 lbs. They ranged in length from 2.7 to 6.6 in TL. They ranked second in relative abundance by number and eighth in relative abundance by weight. Bluegills were collected at the rate of 45.6/hr electrofishing and 4.9/gill-net lift. Their PSD was 31.3. Bluegill growth was below district average and few harvestable-size bluegills were present in the sample. Back-calculated lengths indicated bluegill reached 6 in TL (i.e. quality size) during their fourth year of growth.

Largemouth bass were third in both relative abundance by number and relative abundance by weight. Forty-five bass were collected ranging in length from 6.0 to 19.7 in TL and averaging 12.5 in TL. Bass were collected at the rate of 36.0/hr of electrofishing. The bass PSD was 38.1 and bass RSD-14 was 31.0. Bass growth was below average for age 2 through 4 and above average for age 5 through 7. Back-calculated lengths indicated bass reached 14 in TL (i.e. legal size) at age 5.

We collected 42 gizzard shad ranging in length from 5.5 to 18.3 in TL. Shad ranked fourth in relative abundance by number and first in relative abundance by weight. Total weight of the shad collected was 45.25 lbs. and the average shad was 15 in TL.

Black crappie was fourth in abundance by number. We collected 22 crappies with lengths ranging from 5.1 to 10.2 in TL. Growth of age-2 through 4 fish was below district average. One age-5 crappie measuring 10.2 in TL was collected. Crappie growth was average. Three of the crappie were 8.0 in TL (quality size) or larger.

We collected 21 walleye weighing 27.33 lbs. They ranged in length from 5.0 to 23.4 in TL. Relative abundance by number and weight ranked sixth. Walleye averaged 16.5 in TL. Walleye growth was above average with walleye reaching 14 in TL in their first two years. Slightly more than half of the walleye collected were 14 in TL (i.e. legal size) or larger.

Fifteen yellow perch were collected ranging in length from 4.2 to 6.7 in TL. None were considered quality size (8 in) and perch growth was below district average.

Maximum size (TL) of other game fish collected included channel catfish (24.0 in), northern pike (35.8 in), redear sunfish (8.1 in), sauger (17.3 in), smallmouth bass (13.0 in), and tiger muskie (41.1 in)

DISCUSSION

The 2004 whole-lake fluridone treatment eliminated most of the EWM in Wolf Lake. The fall 2005 DNR plant survey found only a few small areas of EWM along with 8 native species of submerged aquatic plants and the non-native curly-leaf pondweed. Chara, slender naiad, sago pondweed and Vasey's pondweed were the most abundant plants according to site frequency. Native submersed plants appear to be increasing in abundance.

Largemouth bass and walleye populations appeared to be providing good fishing opportunities, although bass PSD (38.1) was slightly lower than the 40 to 70 range that is considered acceptable. The Perch America advanced walleye fingerling stocking program started in 1998 has been very successful with walleye comprising nearly 10% of the weight of the 2005 sample.

Bluegill, black crappie, channel catfish, and northern pike also contribute to the fishery. Bluegill PSD (31.3) was in the acceptable range of 20 to 40 although few quality-sized fish were collected. Occasional reports of purebred muskie (IDNR stocking in 1999) may actually be tiger

muskie from Illinois stockings. The current Indiana state record for tiger muskellunge (24 lbs.) came from Wolf Lake in 1995. This fish was from an Illinois stocking.

White perch continue to dominate the Wolf Lake fishery as they did in the 1999 survey (Table 2). Approximately 50% of these fish were quality size (8.0 in TL) or larger and considered harvestable by anglers. These fish were not found in the 1987 survey and most likely began to enter Wolf Lake in the early 1990's according to scale samples taken in the 1999 survey. Growth of the white perch found in 2005 was similar to that found in 1999.

Alewife, the dominant species in the 1987 survey were nearly absent in the 1999 survey and were not found in the 2005 survey. Five species and one hybrid found in the 1999 survey, and six additional species found in 1987, but absent in 1999, were not found in the 2005 survey. In all, 11 species and one hybrid have disappeared from the survey catch since 1987. We believe the white perch population may be responsible for this dramatic change since they are widely known to eat the eggs of walleye, white bass, other white perch and possibly other species (Wisconsin Sea Grant Institute, 2002) Similar declines in species diversity and abundance were seen in Cedar Lake after the illegal introduction of white perch. Such declines have not been observed following supplemental stocking of other predator fish (walleye, hybrid stripped bass, northern pike, muskellunge, hybrid muskellunge) in other northwest Indiana lakes. Wolf Lake's large white perch population may continue to reduce species diversity and could negatively impact the lake's fishery through competition and predation. Many white perch populations eventually stunt, with few reaching harvestable size (Scott and Crossman 1973).

RECOMMENDATIONS

- The walleye-stocking program conducted by Perch America should continue. A maximum of ten advanced fingerling walleye per acre (4,390 fish) will be permitted.
- The aquatic weed control program started in 2004 by Hammond should continue to control non-native vegetation through spot treatments.
- Areas of native submerged plants should not be included in treatment plans for non-native vegetation.
- An additional fishery survey of this dynamic fishery should be conducted following the completion of the current wetland restoration project.

- The Indiana Department of Natural Resources and the Illinois Department of Natural Resources should establish a Wolf Lake Management team to develop a management plan for this important urban resource.

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Date: April 18, 2006

Table 1. Recent stocking history (private and state) for Indiana waters of Wolf Lake.

Year	Species	Source	Avg. Length (in)	# Stocked
1998	Walleye	IN - DFW	1.3	39,800
1998	Walleye	Perch America	6.5	20,000
1999	Muskellunge	IN - DFW	12.0	755
1999	Channel catfish	IN - DFW	8.0	800
1999	Walleye	IN - DFW	1.6	19,250
1999	Walleye	Perch America	7.0	2,000
2000	Walleye	Perch America	6.8	2,000
2001	Walleye	Perch America	6.0	4,000
2002	Walleye	Perch America	6.0	4,200
2003	Walleye	Perch America	6.0	4,150
2004	Walleye	Perch America	6.0	6,300
2005	Walleye	Perch America	6.0	4,500

Table 2. Catch and sampling effort from the 2005 fishery survey of Wolf Lake as compared to prior surveys.

	2005		1999		1987	
Species	Num. (%)	Wt. (%)	Num. (%)	Wt. (%)	Num. (%)	Wt. (%)
White perch	39.8	14.3	49.2	25.4	-	-
Bluegill	20.4	4.3	13.5	6.9	6.0	3.2
Largemouth bass	9.1	14.2	2.8	9.1	2.6	3.4
Gizzard shad	8.5	16.3	7.0	19.5	9.3	18.3
Black crappie	4.4	1.4	1.8	0.8	4.2	2.3
Walleye	4.2	9.8	1.9	8.8	0.2	0.7
Warmouth	3.2	1.7	1.2	0.7	0.5	0.2
Yellow perch	3.0	0.5	13.6	2.7	8.8	1.9
Pumpkinseed	1.6	0.3	2.9	0.4	2.7	0.6
Channel catfish	1.2	4.5	0.9	4.1	3.0	6.1
Northern pike	1.2	15.7	-	-	0.4	3.4
Redear sunfish	0.8	0.5	-	-	-	-
Common carp	0.4	3.0	0.8	12.1	2.3	19.9
Round goby	0.4	**	-	-	-	-
Sauger	0.4	1.1	-	-	-	-
Smallmouth bass	0.4	0.5	0.4	0.6	-	-
Tiger muskie	0.4	9.9	0.2	2.1	0.5	2.4
Bowfin	0.2	1.5	0.1	0.8	0.5	5.8
Brown bullhead	0.2	0.3	0.6	0.9	1.2	1.3
Golden shiner	-	-	1.6	0.6	0.6	0.1
Alewife	-	-	0.9	0.4	54.3	19.5
White bass	-	-	0.6	1.9	0.5	1.6
White sucker	-	-	0.2	1.1	1.0	3.7
Quillback	-	-	0.1	1.0	0.3	2.0
Hybrid sunfish	-	-	0.1	**	-	-
Bigmouth buffalo	-	-	-	-	0.2	2.2
Bluntnose minnow	-	-	-	-	0.1	**
Goldfish	-	-	-	-	0.1	0.3
Grass pickerel	-	-	-	-	0.4	0.2
Lake chubsucker	-	-	-	-	0.4	0.2
Longnose gar	-	-	-	-	0.1	0.5
Totals	495 fish	278 lbs.	1,013 fish	292 lbs.	1,958 fish	686 lbs.

	Sampling Effort		
Gear	2005	1999	1987
Electrofishing	1.25 hours	1.0 hour	2.0 hours
Trap netting	6 lifts	8 lifts	7 lifts
Gill netting	9 lifts	8 lifts	12 lifts

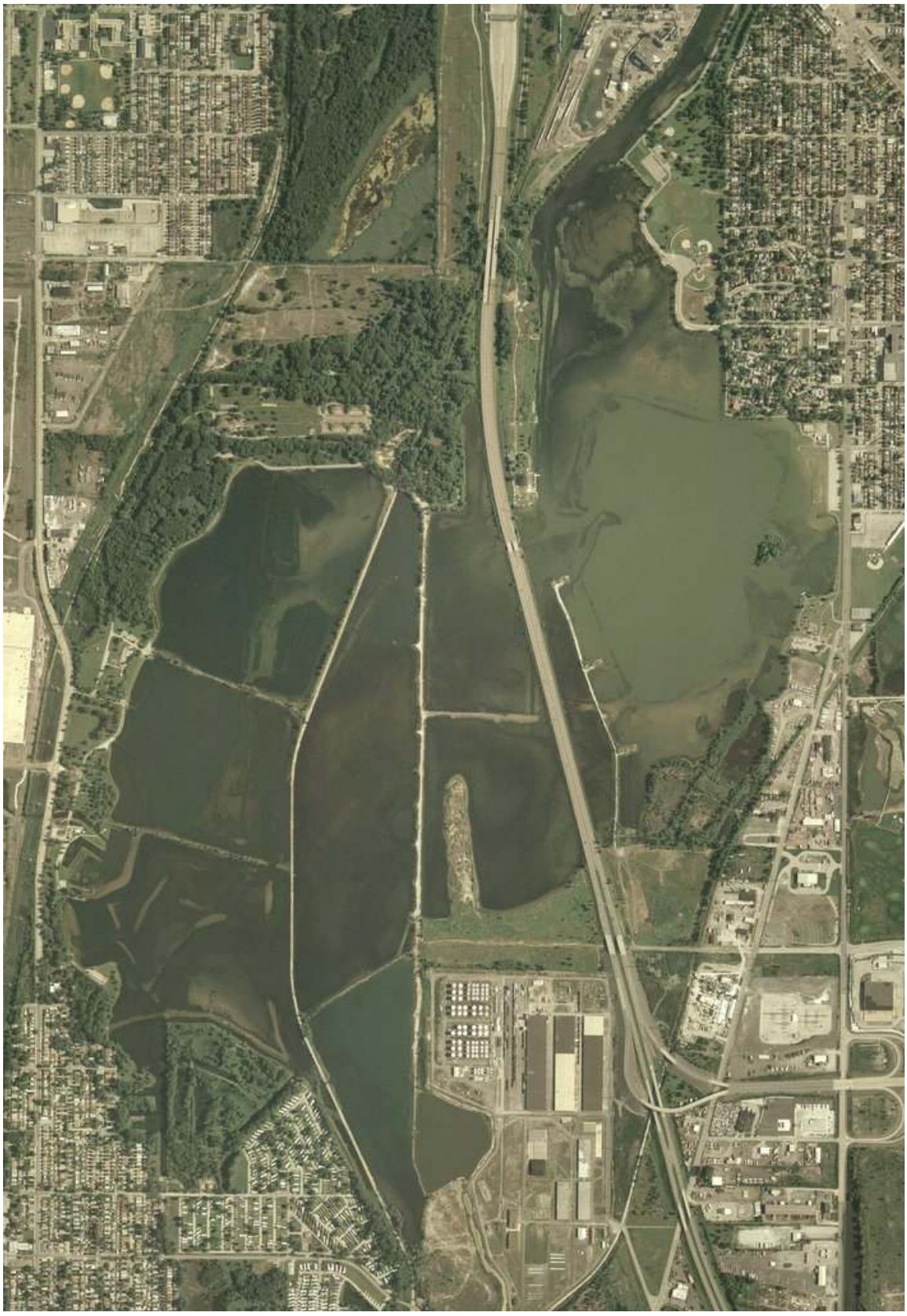

Figure 1. Aerial photo of Wolf Lake taken in July 2003.

APPENDIX
FISHERY SURVEY RESULTS

LAKE SURVEY REPORT

Type of Survey: [ ] Initial Survey [x] Re-Survey

Lake name	County	Date of survey (Month, day, year)
Wolf Lake	Lake	May 23-25, 2005
Biologist's name		Date of Approval (Month, day, year)
Jeremy Price		

LOCATION		
Quadrangle Name	Range	Section
Lake Calumet	10W	1, 12, 13
Township Name	Nearest Town	
37N	Hammond	

ACCESSIBILITY					
State owned public access site			Privately owned public access site		Other access site
None					Public park w/ pay launch
Surface acres	Maximum depth	Average depth	Acre feet	Water level	Extreme fluctuations
468 (IN), 439 (IL)	20				very little
Location of benchmark					
Locate on Illinois side of lake					

INLETS		
Name	Location	Origin
none		

OUTLETS	
Name	Location
Calumet River	
Water level control	

POOL	ELEVATION (Feet MSL)	ACRES
TOP OF DAM		
TOP OF FLOOD CONTROL POOL		
TOP OF CONSERVATION POOL		
TOP OF MINIMUM POOL		
STREAMBED		

Bottom type

- [ ] Bolder
- [x] Gravel
- [x] Sand
- [x] Muck
- [ ] Clay
- [ ] Marl

Watershed use

Heavily populated residential and industrial area

Development of shoreline

Shoreline occupied by interstate highway, industries, private residences, and a city owned park. Approximately 60% of shorline developed

Previous surveys and investigations

Fisheries surveys in 1969, 1974, 1977, 1987, and 1999.

SAMPLING EFFORT					
ELECTROFISHING	Day hours: 0		Night hours: 1.5		Total hours: 1.5
TRAP NETS	Number of traps: 3		Number of Lifts: 2		Total effort: 6
GILL NETS	Number of nets: 3		Number of Lifts: 3		Total effort: 9
ROTENONE	Gallons: n/a	ppm:	Acre Feet Treated:	SHORELINE SEINING	Number of 100 Foot Seine Hauls: none

PHYSICAL AND CHEMICAL CHARACTERISTICS					
Color: Green, algae bloom			Turbidity: 3 Feet	0 Inches (SECCHI DISK)	
Alkalinity (ppm)* Surface: 85.5	Bottom: 119.7		pH Surface: 9.5	Bottom: 9.5	
Conductivity: 540 micromhos			Air temperature: 61 °F		
Water chemistry GPS coordinates: N 41.67215			W -87.51481		

TEMPERATURE AND DISSOLVED OXYGEN (D.O.)								
DEPTH (FEET)	Degrees (°F)	D.O. (ppm)	DEPTH (FEET)	DEGREES (°F)	D.O. (ppm)	DEPTH (FEET)	DEGREES (°F	D.O. (ppm)
SURFACE	66.2	10.4	36			72		
2	66.2	9.5	38			74		
4	66.2	9.6	40			76		
6	66.2	9.5	42			78		
8	65.3	10.0	44			80		
10	65.3	10.2	46			82		
12	64.4	9.8	48			84		
14	62.6	8.0	50			86		
16			52			88		
18			54			90		
20			56			92		
22			58			94		
24			60			96		
26			62			98		
28			64			100		
30			66					
32			68					
34			70					

COMMENTS

*ppm-parts per million

*COMMON NAME OF FISH	NUMBER	PERCENT	LENGTH RANGE (inches)	WEIGHT (pounds)	PERCENT
White perch	197	39.8	3.4 - 10.2	39.78	14.1
Bluegill	101	20.4	2.7 - 6.6	11.91	4.2
Largemouth bass	45	9.1	6.0 - 19.7	43.34	15.4
Gizzard shad	42	8.5	5.5 - 18.3	45.25	16.1
Black crappie	22	4.4	5.1 - 10.2	3.90	1.4
Walleye	21	4.2	5.0 - 23.4	27.33	9.7
Warmouth	16	3.2	2.7 - 8.4	4.71	1.7
Yellow perch	15	3.0	4.2 - 6.7	1.32	0.5
Pumpkinseed	8	1.6	4.4 - 6.0	0.90	0.3
Channel catfish	6	1.2	9.5 - 24.0	12.61	4.5
Northern pike	6	1.2	26.1 - 35.8	43.65	15.5
Redear sunfish	4	0.8	7.3 - 8.1	1.43	0.5
Common carp	2	0.4	20.5 - 21.0	8.26	2.9
Round goby	2	0.4	2.5	0.02	0.0
Sauger	2	0.4	16.0 - 17.3	2.97	1.1
Smallmouth bass	2	0.4	8.9 - 13.0	1.49	0.5
Tiger muskie	2	0.4	32.2 - 41.1	27.60	9.8
Bowfin	1	0.2	24.5	4.25	1.5
Brown bullhead	1	0.2	12.0	0.89	0.3
Total (Species)	495	100.0		281.61	100.0

*Common names of fishes recognized by the American Fisheries Society.

NUMBER, PERCENTAGE, WEIGHT, AND AGE OF WHITE PERCH									
TOTAL LENGTH (inches)	NUMBER COLLECTED	PERCENT OF FISH COLLECTED	AVERAGE WEIGHT (pounds)	AGE OF FISH	TOTAL LENGTH (inches)	NUMBER COLLECTED	PERCENT OF FISH COLLECTED	AVERAGE WEIGHT (pounds)	AGE OF FISH
1.0					19.0				
1.5					19.5				
2.0					20.0				
2.5					20.5				
3.0					21.0				
3.5	5	2.5	0.02	1	21.5				
4.0	3	1.5	0.03	1	22.0				
4.5					22.5				
5.0	1	0.5	0.05	2	23.0				
5.5	1	0.5	0.07	2	23.5				
6.0	5	2.5	0.09	2, 3	24.0				
6.5	10	5.1	0.12	2, 3	24.5				
7.0	37	18.8	0.15	3	25.0				
7.5	36	18.3	0.19	3, 4	25.5				
8.0	54	27.4	0.23	3, 4	26.0				
8.5	21	10.7	0.27	4, 5	TOTAL	197	100		
9.0	21	10.7	0.31	4, 5					
9.5	2	1.0	0.38	5					
10.0	1	0.5	0.48	6					
10.5									
11.0									
11.5									
12.0									
12.5									
13.0									
13.5									
14.0									
14.5									
15.0									
15.5									
16.0									
16.5									
17.0									
17.5									
18.0									
18.5									

ELECTROFISHING CATCH	30.4 / h	GILL NET CATCH	17.3 / lift	TRAP NET CATCH	0.5 / lift

NUMBER, PERCENTAGE, WEIGHT, AND AGE OF BLUEGILL									
TOTAL LENGTH (inches)	NUMBER COLLECTED	PERCENT OF FISH COLLECTED	AVERAGE WEIGHT (pounds)	AGE OF FISH	TOTAL LENGTH (inches)	NUMBER COLLECTED	PERCENT OF FISH COLLECTED	AVERAGE WEIGHT (pounds)	AGE OF FISH
1.0					19.0				
1.5					19.5				
2.0					20.0				
2.5	2	2.0	0.02	2	20.5				
3.0	3	3.0	0.03	2	21.0				
3.5	3	3.0	0.04	2	21.5				
4.0	9	8.9	0.06	3	22.0				
4.5	23	22.8	0.08	3	22.5				
5.0	10	9.9	0.11	3	23.0				
5.5	20	19.8	0.14	3, 4	23.5				
6.0	24	23.8	0.17	4	24.0				
6.5	7	6.9	0.21	3, 4	24.5				
7.0					25.0				
7.5					25.5				
8.0					26.0				
8.5					TOTAL	101	100		
9.0									
9.5									
10.0									
10.5									
11.0									
11.5									
12.0									
12.5									
13.0									
13.5									
14.0									
14.5									
15.0									
15.5									
16.0									
16.5									
17.0									
17.5									
18.0									
18.5									

ELECTROFISHING CATCH	45.6 /hr	GILL NET CATCH	4.9 / lift	TRAP NET CATCH	0.0 / lift

NUMBER, PERCENTAGE, WEIGHT, AND AGE OF LARGEMOUTH BASS									
TOTAL LENGTH (inches)	NUMBER COLLECTED	PERCENT OF FISH COLLECTED	AVERAGE WEIGHT (pounds)	AGE OF FISH	TOTAL LENGTH (inches)	NUMBER COLLECTED	PERCENT OF FISH COLLECTED	AVERAGE WEIGHT (pounds)	AGE OF FISH
1.0					19.0				
1.5					19.5	1	2.2	3.76	7
2.0					20.0				
2.5					20.5				
3.0					21.0				
3.5					21.5				
4.0					22.0				
4.5					22.5				
5.0					23.0				
5.5					23.5				
6.0	1	2.2	0.12	2	24.0				
6.5	1	2.2	0.14	2	24.5				
7.0					25.0				
7.5	1	2.2	0.24	3	25.5				
8.0	2	4.4	0.28	3	26.0				
8.5	4	8.9	0.33	3	TOTAL	45	100		
9.0	7	15.6	0.38	3					
9.5	3	6.7	0.44	3					
10.0	3	6.7	0.52	3					
10.5	3	6.7	0.58	3, 4					
11.0	1	2.2	0.65	4					
11.5	3	6.7	0.79	4					
12.0	2	4.4	0.87	4					
12.5									
13.0									
13.5	1	2.2	1.19	5					
14.0	1	2.2	1.44	5					
14.5	3	6.7	1.51	5, 6					
15.0	2	4.4	1.73	5, 6					
15.5	1	2.2	1.94	6					
16.0	2	4.4	2.07	6					
16.5									
17.0	1	2.2	2.44	6					
17.5									
18.0	1	2.2	2.89	6					
18.5	1	2.2	3.18	7					

ELECTROFISHING CATCH	35.2 /hr	GILL NET CATCH	0.1 /lift	TRAP NET CATCH	0.0 /lift

NUMBER, PERCENTAGE, WEIGHT, AND AGE OF GIZZARD SHAD									
TOTAL LENGTH (inches)	NUMBER COLLECTED	PERCENT OF FISH COLLECTED	AVERAGE WEIGHT (pounds)	AGE OF FISH	TOTAL LENGTH (inches)	NUMBER COLLECTED	PERCENT OF FISH COLLECTED	AVERAGE WEIGHT (pounds)	AGE OF FISH
1.0					19.0				
1.5					19.5				
2.0					20.0				
2.5					20.5				
3.0					21.0				
3.5					21.5				
4.0					22.0				
4.5					22.5				
5.0					23.0				
5.5	2	4.8	0.07	1	23.5				
6.0	1	2.4	0.09	1	24.0				
6.5	4	9.5	0.12	1	24.5				
7.0					25.0				
7.5					25.5				
8.0					26.0				
8.5					TOTAL	42	100		
9.0									
9.5									
10.0									
10.5									
11.0									
11.5									
12.0									
12.5									
13.0	1	2.4	0.73	2					
13.5									
14.0	1	2.4	0.86	3					
14.5	2	4.8	0.99	2, 3					
15.0	7	16.7	1.08	3					
15.5	8	19.0	1.17	3					
16.0	3	7.1	1.29	3					
16.5	6	14.3	1.41	3					
17.0	2	4.8	1.53	3, 4					
17.5	3	7.1	1.66	4					
18.0	1	2.4	1.79	4					
18.5	1	2.4	1.87	4					

ELECTROFISHING CATCH	12.0 /hr	GILL NET CATCH	3.0 / lift	TRAP NET CATCH	0.0 /lift

NUMBER, PERCENTAGE, WEIGHT, AND AGE OF BLACK CRAPPIE									
TOTAL LENGTH (inches)	NUMBER COLLECTED	PERCENT OF FISH COLLECTED	AVERAGE WEIGHT (pounds)	AGE OF FISH	TOTAL LENGTH (inches)	NUMBER COLLECTED	PERCENT OF FISH COLLECTED	AVERAGE WEIGHT (pounds)	AGE OF FISH
1.0					19.0				
1.5					19.5				
2.0					20.0				
2.5					20.5				
3.0					21.0				
3.5					21.5				
4.0					22.0				
4.5					22.5				
5.0	1	4.5	0.07	2	23.0				
5.5					23.5				
6.0					24.0				
6.5	8	36.4	0.14	3	24.5				
7.0	10	45.5	0.17	3, 4	25.0				
7.5					25.5				
8.0	2	9.1	0.24	4	26.0				
8.5					TOTAL	22	100		
9.0									
9.5									
10.0	1	4.5	0.52	5					
10.5									
11.0									
11.5									
12.0									
12.5									
13.0									
13.5									
14.0									
14.5									
15.0									
15.5									
16.0									
16.5									
17.0									
17.5									
18.0									
18.5									

ELECTROFISHING CATCH	0.0 / hr	GILL NET CATCH	2.4 / lift	TRAP NET CATCH	0.0 / lift

NUMBER, PERCENTAGE, WEIGHT, AND AGE OF WALLEYE									
TOTAL LENGTH (inches)	NUMBER COLLECTED	PERCENT OF FISH COLLECTED	AVERAGE WEIGHT (pounds)	AGE OF FISH	TOTAL LENGTH (inches)	NUMBER COLLECTED	PERCENT OF FISH COLLECTED	AVERAGE WEIGHT (pounds)	AGE OF FISH
1.0					19.0				
1.5					19.5				
2.0					20.0				
2.5					20.5				
3.0					21.0				
3.5					21.5				
4.0					22.0				
4.5					22.5				
5.0	2	9.5	0.02	1	23.0	1	4.8	4.46	5
5.5	1	4.8	0.03	1	23.5	1	4.8	4.74	5
6.0					24.0				
6.5					24.5				
7.0	1	4.8	0.07	1	25.0				
7.5					25.5				
8.0					26.0				
8.5					TOTAL	21	100		
9.0									
9.5									
10.0									
10.5									
11.0	1	4.8	0.37	2					
11.5	3	14.3	0.42	2					
12.0									
12.5									
13.0	2	9.5	0.62	2					
13.5									
14.0									
14.5	1	4.8	0.90	2					
15.0	1	4.8	1.06	2					
15.5									
16.0									
16.5									
17.0	2	9.5	1.52	3					
17.5									
18.0	2	9.5	1.98	3					
18.5	3	14.3	2.06	3, 4					

ELECTROFISHING CATCH	13.6 / hr	GILL NET CATCH	0.4 / lift	TRAP NET CATCH	0.0 / lift

NUMBER, PERCENTAGE, WEIGHT, AND AGE OF YELLOW PERCH									
TOTAL LENGTH (inches)	NUMBER COLLECTED	PERCENT OF FISH COLLECTED	AVERAGE WEIGHT (pounds)	AGE OF FISH	TOTAL LENGTH (inches)	NUMBER COLLECTED	PERCENT OF FISH COLLECTED	AVERAGE WEIGHT (pounds)	AGE OF FISH
1.0					19.0				
1.5					19.5				
2.0					20.0				
2.5					20.5				
3.0					21.0				
3.5					21.5				
4.0	1	6.7	0.04	2	22.0				
4.5	2	13.3	0.05	2	22.5				
5.0					23.0				
5.5	3	20.0	0.08	2, 3	23.5				
6.0	6	40.0	0.10	3	24.0				
6.5	3	20.0	0.12	3	24.5				
7.0					25.0				
7.5					25.5				
8.0					26.0				
8.5					TOTAL	15	100		
9.0									
9.5									
10.0									
10.5									
11.0									
11.5									
12.0									
12.5									
13.0									
13.5									
14.0									
14.5									
15.0									
15.5									
16.0									
16.5									
17.0									
17.5									
18.0									
18.5									

ELECTROFISHING CATCH	1.6 /hr	GILL NET CATCH	1.4 /lift	TRAP NET CATCH	0.0 /lift

Species White Perch	YEAR CLASS	NUMBER OF FISH AGED	BACK CALCULATED LENGTH (inches) AT EACH AGE							
			I	II	III	IV	V	VI	VII	VIII
Intercept = 0.7										
	2003	5	2.6	5.8						
	2002	14	2.7	5.5	7.1					
	2001	6	2.9	5.2	6.8	8.0				
	2000	8	3.3	5.5	6.7	7.5	8.3			
	1999*	1	2.2	4.2	6.7	7.8	9.1	9.6		
	AVERAGE LENGTH		2.8	5.5	6.9	7.8	8.3			
	Year classes averaged		4	4	3	2	1			

Species Bluegill	YEAR CLASS	NUMBER OF FISH AGED	BACK CALCULATED LENGTH (inches) AT EACH AGE							
			I	II	III	IV	V	VI	VII	VIII
Intercept = 0.8										
	2003	4	2.0	3.1						
	2002	16	1.8	3.3	4.4					
	2001	11	1.9	3.3	4.8	5.7				
	AVERAGE LENGTH		1.9	3.3	4.6	5.7				
	Year classes averaged		3	3	2	1				

Species Largemouth bass	YEAR CLASS	NUMBER OF FISH AGED	BACK CALCULATED LENGTH (inches) AT EACH AGE							
			I	II	III	IV	V	VI	VII	VIII
Intercept = 0.8										
	2003*	2	2.4	6.0						
	2002	19	2.6	6.1	8.7					
	2001	7	2.8	6.6	9.2	11.0				
	2000	5	3.0	5.8	8.9	12.0	13.7			
	1999	7	2.7	6.4	9.4	12.2	14.3	15.7		
	1998*	2	2.2	6.8	11.4	13.6	16.1	17.5	18.9	
	AVERAGE LENGTH		2.8	6.2	9.1	11.7	14.0	15.7		
	Year classes averaged		4	4	4	3	2	1		

Species Black Crappie	YEAR CLASS	NUMBER OF FISH AGED	BACK CALCULATED LENGTH (inches) AT EACH AGE							
			I	II	III	IV	V	VI	VII	VIII
Intercept = 1.4										
	2003*	1	2.4	5.1						
	2002	9	2.8	4.8	6.9					
	2001	3	2.5	4.3	6.4	7.6				
	2000*	1	2.9	4.8	6.6	8.7	10.2			
	AVERAGE LENGTH		2.7	4.6	6.7	7.6				
	Year classes averaged		2	2	2	1				

*Not included in average length calculations.

Species Walleye	YEAR CLASS	NUMBER OF FISH AGED	BACK CALCULATED LENGTH (inches) AT EACH AGE							
			I	II	III	IV	V	VI	VII	VIII
Intercept = 2.2										
	2003	7	7.3	12.7						
	2002	6	8.0	14.7	17.9					
	2001*	1	7.6	13.4	16.0	18.0				
	2000*	2	8.9	15.1	18.4	21.8	23.2			
	AVERAGE LENGTH		7.7	13.7	17.9					
	Year classes averaged		2	2	1					

Species Yellow Perch	YEAR CLASS	NUMBER OF FISH AGED	BACK CALCULATED LENGTH (inches) AT EACH AGE							
			I	II	III	IV	V	VI	VII	VIII
Intercept = 1.2										
	2003	4	2.7	4.0						
	2002	8	3.1	4.7	5.7					
	2001*	1	2.7	4.5	5.4	6.5				
	AVERAGE LENGTH		2.9	4.4	5.7					
	Year classes averaged		2	2	1					

*Not included in average length calculations.

GILL NETS					TRAP NETS					ELECTROFISHING				
1	N	41.6746519	W	-87.51737718	1	N	41.6731785	W	-87.51140364	1	N	41.67054	W	-87.51075
	N	41.6744810	W	-87.51818008	2	N	41.6762599	W	-87.51250821		N	41.67328	W	-87.50925
2	N	41.6705947	W	-87.51820832	3	N	41.6779845	W	-87.52060588	2	N	41.67218	W	-87.51153
	N	41.6711378	W	-87.51856531	4	N	41.6713522	W	-87.52175152		N	41.67781	W	-87.51368
3	N	41.6723591	W	-87.51265372	5	N	41.6717606	W	-87.5191424	3	N	41.67804	W	-87.52034
	N	41.6729163	W	-87.5121607	6	N	41.6689346	W	-87.51275078		N	41.68287	W	-87.51980
4	N	41.6684379	W	-87.51489563	7	N		W		4	N	41.67376	W	-87.52049
	N	41.6681328	W	-87.5157733	8	N		W			N	41.67154	W	-87.51894
5	N	41.6697651	W	-87.51257854	9	N		W		5	N	41.66838	W	-87.51713
	N	41.6703840	W	-87.51223345	10	N		W			N	41.66935	W	-87.51183
6	N	41.6721903	W	-87.50965166	11	N		W		6	N		W	
	N	41.6727521	W	-87.50932225	12	N		W			N		W	
7	N	41.6712129	W	-87.51813624	13	N		W		7	N		W	
	N	41.6716882	W	-87.51875885	14	N		W			N		W	
8	N	41.6725338	W	-87.51258491	15	N		W		8	N		W	
	N	41.6730467	W	-87.51207344	16	N		W			N		W	
9	N	41.6760462	W	-87.51419817	17	N		W		9	N		W	
	N	41.6762224	W	-87.51503527	18	N		W			N		W	